

# Management of a massive compound odontoma in a 9-year child

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## Abstract

The purpose of this paper is to describe the case of surgical management of massive compound odontoma with 36 denticles in a 9-year-boy who presented with a complaint of pain and swelling in mandibular left posterior region and retained 74. The denticles were removed after the removal of retained 74 completely and wound healing was observed. Odontomas are considered as hamartomatous dental malformation rather than true neoplasm of odontogenic origin. They are the most commonly occurring abnormally formed dental tissues that interfere with eruption of associated teeth. The eruption disturbances seen due to odontomas are delayed eruption or deflection of associated teeth. These malformations are usually asymptomatic and discovered during routine radiographic investigations. Correct diagnosis followed by proper treatment plan results in a favorable prognosis.

**Keywords:** Compound, denticles, impacted, odontoma, tooth

## Introduction

Odontoma that was previously considered as tumor of odontogenic origin<sup>[1]</sup> is now considered as hamartomatous dental malformation formed by the overgrowth or transitory of complete dental tissue.<sup>[2]</sup> Odontomas are usually asymptomatic and generally consist of unerupted or impacted teeth, retained deciduous teeth, swelling and evidence of infection.<sup>[3]</sup> Kramer has discussed the factors attributed to the etiology of odontoma formation.<sup>[4,5]</sup>

Odontomas constitute about 22% of all odontogenic tumors of the jaws.<sup>[6]</sup> The incidence of compound odontoma ranges between 9% to 37% and that of complex odontoma between 5% to 30%, respectively.<sup>[4]</sup> Odontomas are usually discovered during second and third decades of life with some cases in first decade of life too.<sup>[6]</sup> The compound odontoma is more common than complex odontoma, which in turn is more common than ameloblasticodontoma. Majority of odontomas in anterior segment of jaws are compound odontoma (61%); whereas in posterior segment, complex odontomas are common (34%).<sup>[6]</sup> Interestingly, it has been

observed that both type of odontomas occurred more frequently on right side of jaw than left, (compound 62% and complex 68%).<sup>[2,3]</sup> The compound odontoma frequently occurs in incisor-cuspid region of maxillary arch in contrast to complex odontoma that is usually found in premolar-molar region of mandible.<sup>[6]</sup>

In this paper, a rare case of massive compound odontoma with 36 denticles in 9 years boy is discussed that was diagnosed accidentally and treated for the presentation of condition with relevant literature review.

## Case Report

A 9-year boy reported to the Department of Pediatric and Preventive Dentistry, with a chief complaint of pain and swelling in mandibular left posterior region since 1 year. The swelling was small initially that increased gradually over a period of time to present size with pain aggravating on mastication. Family and past medical histories were noncontributory. The swelling was firm and slightly painful on palpation. Intra-oral examination of affected side revealed presence of a grossly carious, retained 74. An oval shaped swelling was noticed over buccal gingiva extending from mesial margin of 33 to distal margin of 35 anteroposteriorly measuring approximately 3 cm and superoinferiorly 1.5 cm in dimension. Adjacent 33 was partly erupted and revealed slight mesial displacement as compared to contralateral 43.

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Access this article online	
Quick Response Code: 	Website: <a href="http://www.contempclindent.org">www.contempclindent.org</a>
	DOI: 10.4103/0976-237X.188582

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**How to cite this article:** Kale YJ, Dahake PT, Patil PS, Dadpe MV. Management of a massive compound odontoma in a 9-year child. *Contemp Clin Dent* 2016;7:409-12.

Patient was advised an intra-oral periapical radiograph (IOPAR) and orthopantomograph (OPG) that revealed presence of multiple dense radio-opaque structures contained in a radiolucent cavity surrounded by a corticated border in relation to apices of carious 74 [Figure 1a and b]. Based on clinical signs and radiographic findings, the condition was provisionally diagnosed as compound odontoma. Differential diagnosis of this condition included odontoma, ameloblastic fibro-odontoma, ameloblastic fibroma, dentinoma, third stage cementoblastoma and odonto-ameloblastoma.<sup>[1,7]</sup>

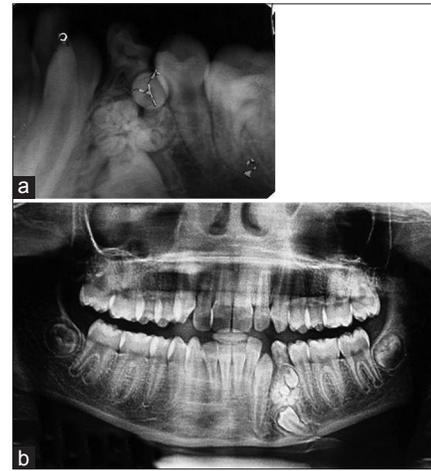
### Treatment

Treatment of choice for management of odontoma comprise extraction of retained primary tooth, followed by complete surgical enucleation of denticles and associated soft tissues.<sup>[6]</sup>

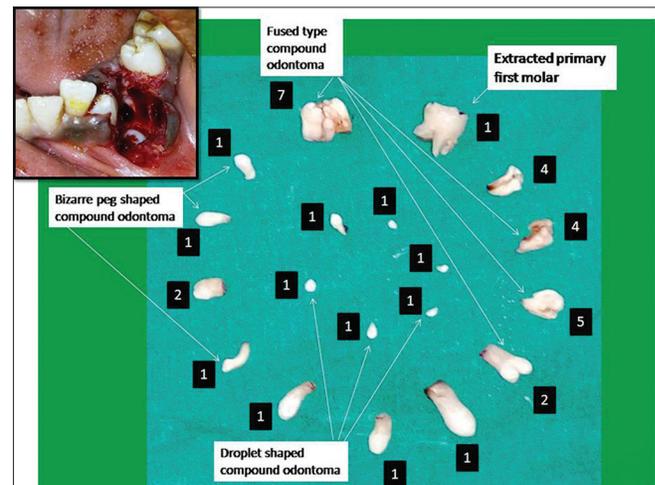
After all investigations, profuse local anesthesia of associated area was achieved by mandibular nerve block and local infiltration technique. The retained 74 was extracted and full thickness trapezoidal mucoperiosteal flap from mesial margin of 33 to distal margin of 35 was reflected to visualize the area. A bony window was prepared through occlusal cortical bone and about 36 denticles were removed carefully along with the capsule [Figure 2]. The unerupted 34 was exposed to facilitate its eruption and sharp bony margins were rounded off [Figure 2]. The mucoperiosteal flap was sutured back with 3-0 black braided silk. The patient was prescribed suitable antibiotics and analgesics for 5 days and recalled after 1 week for suture removal.

The excised tissue was sent to Department of Oral Pathology and Microbiology for histopathological evaluation. Macroscopically extracted denticles were independent as well as fused with morphological resemblance to normal tooth. Dimensions of these denticles were variable; from 2 mm × 3 mm to 8 mm × 12 mm and shapes from regular droplet to bizarre peg like [Figure 2]. Decalcified hematoxylin and eosin stained section of the specimen showed central zone of pulp spaces and areas of active mineralization [Figure 3a]. Areas of primary dentin were observed juxtaposed between outer empty spaces of partially demineralized enamel/primary cementum and pulp [Figure 3b]. Ground section of denticles showed areas of enamel, dentin and pulp in coronal region as well as cementum, dentin and pulp spaces in transmitted light [Figure 3c]. These findings were similar to the other reported literature. Most authors agree that such condition appear more often in the anterior maxilla.<sup>[7]</sup>

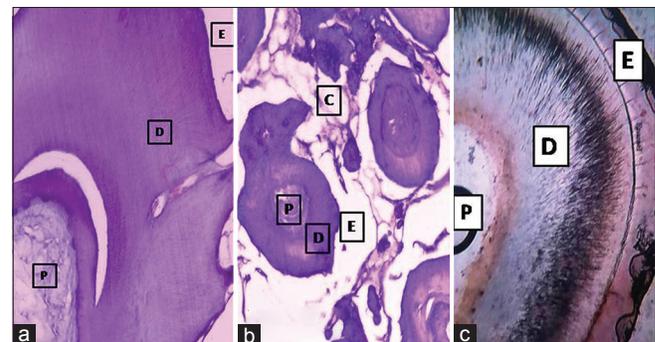
Healing of surgical wound was uneventful and by means of secondary intention. The patient is on periodic observation for 6, 12, and 24 months interval. Radiographic observations after 6 months revealed erupting 34 with space loss due to drifting of adjacent teeth [Figure 4]. Follow-up radiographic evaluation (OPG and IOPAR, respectively) of erupting 34 shows eruptive tooth movement [Figures 5 and 6].



**Figure 1:** (a) Intra-oral periapical radiograph showing multiple radio-opaque tooth-like structures below 74, (b) orthopantomograph showing multiple denticles surrounded by a narrow radiolucent zone



**Figure 2:** Gross specimen of surgically removed odontomas showing denticles and surgically exposed 34 after removal of all denticles



**Figure 3:** (a and b) Decalcified H and E stained odontoma showing enamel (E), dentin (D) and pulp space (P) with connective tissue stroma and cementum (C) (×10 view). (c) Ground section of odontoma showing tooth-like arrangement of enamel (E), dentin (D) and pulp space (P) (×10 view)



**Figure 4:** Orthopantomograph showing 6 months follow-up and erupting 34



**Figure 5:** Follow-up orthopantomograph radiograph of patient after 9 months showing eruptive tooth movement



**Figure 6:** Follow-up intra-oral periapical radiograph of 34 after 9 months showing eruptive tooth movement

## Discussion

Odontoma is a type of dental malformation resulting from growth of both epithelial and mesenchymal components of dental lamina remnants. These components demonstrate complete differentiation, resulting in functional ameloblasts and odontoblasts forming enamel and dentin.<sup>[6,7]</sup> Odontomas are inherited through postnatal mutant gene interference that control tooth development. In humans, dental lamina has tendency to disintegrate into clumps of cells between tooth

germs. Mutation of these persistent dental lamina cells or tooth germ epithelial cells may trigger their inherent capacity to transform into cap and bell stages necessary for tooth formation. Moreover, retained ability of these tissues may stimulate mesenchymal cell differentiation, obligatory for hard tissue formation. Thus, genesis of functional ameloblasts and odontoblasts are responsible for odontoma formation.<sup>[8]</sup> Comparison of normal tooth forming and odontogenic tumor cells revealed presence of common molecules, expressed in both types of cells. A very likely explanation for this is recapitulation and over expression of tumor specific genetic programs transcribed at an undetectable level during normal odontogenesis and detectable level by odontogenic tumor epithelial cells in an abnormal manner.<sup>[8]</sup>

Odontoma is usually asymptomatic;<sup>[7]</sup> however, occurrence of odontoma is associated with multiple factors such as trauma and infection at the affected site offering ideal conditions for its initiation. This lesion is odontogenic in origin and is considered a self-limiting anomaly.<sup>[5]</sup> Pressures due to growth, trauma, infection, presence of mature ameloblasts, cell rests of serres (dental lamina remnants) and extraneous odontogenic epithelial cells may be regarded as sources of disturbances in the mechanism of development.<sup>[5]</sup>

A developing odontoma can be detected by routine radiography and sometimes may cause difficulty in identification due to inadequate calcification.<sup>[5]</sup> However, a mature compound odontoma appears as collection of tooth-like structures surrounded by a narrow radiolucent zone.<sup>[3,9]</sup> The compound odontoma appears as a collection of numerous radio-opaque, miniature tooth-like structures known as denticles.<sup>[10]</sup> Occasionally, they may become large and produce expansion of bone with consequent facial asymmetry.<sup>[10]</sup> In most of the cases, pathologic alterations observed in neighboring teeth include devitalization, malformation, aplasia, malposition or impaction. Increase in the size of odontoma leads to sequestration or resorption of overlying bone, thus causing its occlusal movement.<sup>[3,9]</sup> Degree of morpho-differentiation and histodifferentiation of dental hard tissue is essential for making differential diagnosis of odontoma.<sup>[8,10]</sup> Although ameloblastic odontoma, ameloblastic fibro-odontoma bear greater radiographic resemblance to odontoma, histopathological examination for definitive diagnosis of the condition is always recommended.<sup>[8,11]</sup> Some investigators propose that ameloblastic fibroma and ameloblastic fibro-odontoma both developmentally and histomorphologically represent early stages of odontoma formation.<sup>[6]</sup>

In earlier days; odontoma as tumor of odontogenic origin, was treated with radical resection of the affected area. However, changed concept of odontomas as hamartomatous malformations has modified treatment plan to conservative modality including selective removal of denticles with more emphasis on enucleation of connective tissue capsules, as

its remnants left behind can predispose to cystic change, interfere with eruption of permanent teeth and cause considerable destruction of bone due to recurrence.<sup>[11]</sup> Adjacent teeth displaced due to odontoma are seldom damaged.<sup>[11]</sup> A thorough visual, manual as well as radiographic examination should be performed for all the patients before and after surgical enucleation of odontomas. If associated permanent tooth is impacted due to inadequate space and possibility of its eruption is limited, then orthodontic treatment for eruption guidance is advised in patients those presenting with clinical evidence of delayed eruption, missing tooth or temporary tooth displacement, with or without history of trauma.<sup>[9]</sup>

In the present case, the occurrence of compound odontoma was detected in the first decade of life that is uncommon finding. Another interesting fact to note in this case was site reversal of the odontoma. Unlike the documentation in literature, compound odontoma in this case was detected in mandibular premolar region on left side. The denticles removed from the site were of variable size and shape. Thus, the odontoma excised from its site can be classified as intraosseous, geminated, denticulo-particulate, variably shaped, mature compound odontoma approximately 36 in number.

## Conclusion

For every pediatric patient those presenting clinical evidence of delayed tooth eruption, transient tooth displacement or retained deciduous teeth with or without a history of previous dental trauma careful radiographic examination and early diagnosis should be performed. Correct diagnosis of the condition facilitates the clinician to adopt a simpler and less complex approach of treatment and ensures better prognosis of the disease. In spite of low frequency, care should be

taken for complete surgical enucleation of odontomas to avoid relapse as well as displacement or devitalization of adjacent teeth.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

## References

1. Shafer WG, Hine MK, Levy BM. A Text Book of Oral Pathology. Cysts and Tumours of Odontogenic Origin. 4<sup>th</sup> ed. Philadelphia: W.B. Saunders and Co.; 1993. p. 308-12.
2. Yadav M, Godge P, Meghana SM, Kulkarni SR. Compound odontoma. *Contemp Clin Dent* 2012;3 Suppl 1:S13-5.
3. Neville BW, Damm DD, Allen CM, Bouquot JE. Oral and Maxillofacial Pathology. Odontogenic cysts and tumours. 2<sup>nd</sup> ed. Saunders; 2004. p. 631-2. ISBN 978-81--312--1570-8.
4. Kramer IR. WHO. International Histological Classification of Tumours. Histological Typing of Odontogenic Tumour. 2<sup>nd</sup> ed. Berlin: Springer; 1992. p. 16-21.
5. Satish V. Odontome: A brief overview. *Int J Clin Pediatr Dent* 2011;4:177-85.
6. Singh S. Management of unerupted central incisor due to compound odontoma: A case report. *Int J Oral Maxillofac Pathol* 2012;3:45-8.
7. Hidalgo-Sánchez O, Leco-Berrocá MI, Martínez-González JM. Metaanalysis of the epidemiology and clinical manifestations of odontomas. *Med Oral Patol Oral Cir Bucal* 2008;13:E730-4.
8. Papagerakis P, Peuchmaur M, Hotton D, Ferkdadji L, Delmas P, Sasaki S, *et al.* Aberrant gene expression in epithelial cells of mixed odontogenic tumors. *J Dent Res* 1999;78:20-30.
9. Singh S, Singh M, Singh I, Khandelwal D. Compound composite odontome associated with an unerupted deciduous incisor – A rarity. *J Indian Soc Pedod Prev Dent* 2005;23:146-50.
10. Serra-Serra G, Berini-Aytés L, Gay-Escoda C. Erupted odontomas: A report of three cases and review of the literature. *Med Oral Patol Oral Cir Bucal* 2009;14:E299-303.
11. Syed MR. Bilateral complex odontomas in mandible. *J Oral Maxillofac Pathol* 2006;10:89-91.